Multilayered Oscillating Device With Spine Support

ABSTRACT OF THE DISCLOSURE

A multilayered torsional hinged device such as a scanning mirror including a hinge layer with an attaching member pivotally supported by torsional hinges. A front layer is bonded to the front side of the attaching member and a back layer is bonded to the back side of the attaching member. The front layer and the back layer have equal mass moments to balance the moment of inertia and stresses on the torsional hinges. Further, the attaching member and a back portion of the front layer define a spine structure that extends to the tips of the mirror. The spine structure allows reduction of weight and mass of the mirror while maintaining mirror stiffness. The back layer may be a permanent magnet if the mirror oscillating drive is a magnetic drive. Alternately, the back layer may be another silicon slice.